Nitomortar PE

constructive solutions

High strength jointing and multi-purpose repair compounds

Uses

For fast and emergency reinstatement of concrete, bedding, jointing and reprofiling of concrete, masonry and brickwork. Nitomortar PE is ideally suited for the repair and reprofiling of precast concrete units, damaged arrises and treads. It can be used to infill hollows and holes in concrete floors, bedding and fixing kerbstones, manhole sets, frames, brick slips, ceramic tiles, slabs and coping stones. Nitomortar PE Concrete should be used to repair larger voids. The products are especially useful where fast strength gain is important. When properly compacted, they are highly impermeable.

Advantages

- Fast development of strength minimises disruption — stronger than concrete within 2 hours
- No primer required
- High chemical and oil resistance
- Extremely versatile — can be poured, trowelled or modified with aggregate without significantly affecting setting times or strengths
- Extremely low wastage due to ability to mix part packs to consistencies required
- Will cure down to 0°C
- Pre-weighed components ensure consistency

Description

Nitomortar PE products are based on a polyester resin system. There are two grades.

Nitomortar PE: The standard material for general purpose use.

Nitomortar PE Concrete: A special grade allowing users to add suitable aggregate, thereby substantially reducing the cost of infilling larger voids.

Winter versions of Nitomortar PE is available which are faster setting at low ambient temperatures. Both grades of Nitomortar PE are supplied as two-component products with pre-weighed quantities of liquid resin and powdered hardener, ready for on-site mixing and use. The hardener system enables the mix to be varied from a pourable consistency to a trowellable mortar without significantly affecting the setting times or strengths achieved.

Properties

General

Bond strength: Nitomortar PE forms a strong bond to most structural materials provided the surfaces are dry and suitably prepared. The resulting bond between Nitomortar PE and concrete will be stronger than the tensile strength of the concrete itself.

Shrinkage: The polyester resin used in Nitomortar PE is formulated to reduce shrinkage to a minimum. Linear shrinkage will be approximately 0.8%. No further shrinkage will occur after the material has cured.

Durability: Cured Nitomortar PE performs under temperatures as high as 60°C and down to sub-zero conditions.

Chemical resistance: Fully cured Nitomortar PE is unaffected by water, petrol, oil and many corrosive chemicals. It is not recommended for use in contact with ketones, phenols, strong alkalis and oxidising agents. Because chemical resistance can be affected by external variable factors (e.g. temperature), the local Fosroc office should be consulted for specific applications.

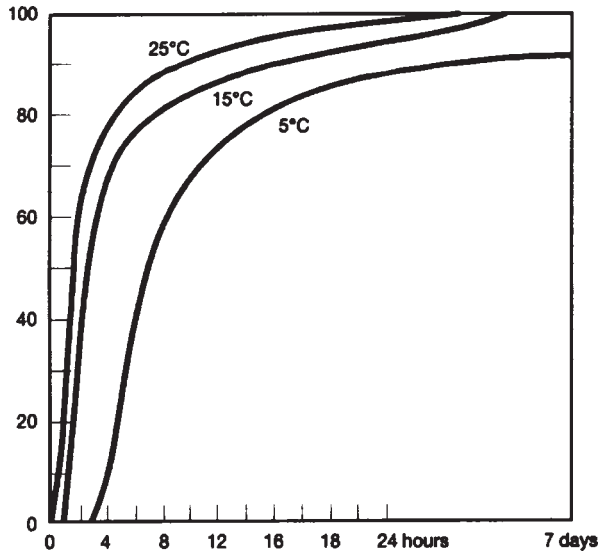
Underwater use: Nitomortar PE will cure under water. The local Fosroc office should be consulted when considering this type of application.

Working time

Temperature	Nitomortar PE	Nitomortar PE Concrete
5°C: Winter grade:	160 minutes 60 minutes	250 minutes
15°C: Winter grade:	35 minutes 20 minutes	90 minutes
25°C:	15 minutes	50 minutes
35°C:	5 minutes	25 minutes

Compressive strength gain: All grades of Nitomortar PE will develop strengths equivalent to mature concrete within a 2 to 6 hour period at temperatures above 15°C. Typical compressive strength development is shown below.

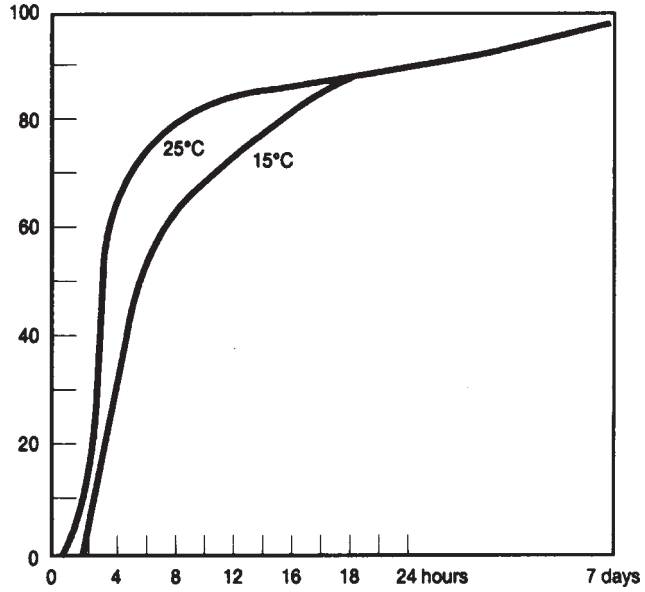
Nitomortar PE



Note: The performance of Nitomortar PE winter grade at 5°C is similar to that of the standard grade at 20°C.

Nitomortar PE

Nitomortar PE Concrete



Property at 20°C	Nitomortar PE flowable consistency	Nitomortar PE Concrete*
Compressive strength at 7 days (BS 6319, Pt 2):	100 N/mm²	100 N/mm²
Flexural strength (BS 6319, Pt 3):	28 N/mm²	25 N/mm²
Tensile strength (BS 6319, Pt 7):	14 N/mm²	12 N/mm²
Young's Modulus of Elasticity:	16 kN/mm²	23 kN/mm²
Thermal conductivity:	1.0 Watt/m/°C	—
Coefficient of thermal expansion:	30 x 10^{-6} per °C	—

* Note that the strengths quoted for Nitomortar PE Concrete may vary dependent on the type of aggregate selected.

Mix design — Nitomortar PE

	Hardener : resin ratio (volume)	(weight)	Density kg/m³	Yield litres/kg
Trowellable:	3.2 : 1	4.2 : 1	1,920	0.52
Flowable:	2.5 : 1	3.5 : 1	1,840	0.54
Fluid:	1.6 : 1	2.0 : 1	1,680	0.60

Mix design — Nitomortar PE Concrete

For each full pack of Nitomortar PE Concrete containing 5 litres (5.5 kg) resin and 3.75 litres (5.5 kg) powdered hardener, use one of the alternative aggregate types described in the table.

Dried aggregate	Quantity	Yield
Grade C sand:	17 litres (30 kg)	20 litres
Grade M sand:	14 litres (25 kg)	17.5 litres
Grade F sand:	11.5 litres (21 kg)	15 litres
Grade M sand: 10 mm aggregate:	6.5 litres (12 kg) 12 litres (21 kg)	22.5 litres
Grade M sand: 10 mm aggregate: 20 mm aggregate:	5.5 litres (10 kg) 5.5 litres (9.5 kg) 11 litres (19 kg)	27.5 litres

Application instructions

Preparation

Saw cut or cut back the extremities of the repair locations to a depth of at least 5 mm to avoid feather-edging and to provide a square edge. Break out the complete repair area to a minimum depth of 5 mm up to the sawn edge.

The surface should be free from any contamination. Where breaking out is not required, roughen the surface and remove any laitance by light scabbling or grit-blasting.

Oil and grease deposits should be removed by steam cleaning, detergent scrubbing or the use of a proprietary degreaser. The effectiveness of decontamination should then be assessed by a pull-off test.

Fully expose any corroded steel in the repair area and remove all loose scale and corrosion deposits. Steel should be cleaned to a bright condition paying particular attention to the back of exposed steel bars. Grit-blasting is recommended for this process.

Where corrosion has occurred due to the presence of chlorides, the steel should be high-pressure washed with clean water immediately after grit-blasting to remove corrosion products from pits and imperfections within its surface.

Reinforcing steel priming

Exposed steel reinforcement should be treated with one full coat of Nitoprime Zincrich Plus. This should be allowed to dry before continuing.

If any doubt exists about having achieved an unbroken coating, a second application should be made and, again, allowed to dry before continuing.

Nitomortar PE

Substrate priming

No priming is necessary when using Nitomortar PE products.

Mixing

Pour the required quantity of liquid resin into a clean plastic mixing bucket and add the powdered hardener slowly, stirring continuously. Continue mixing for 3 minutes until a uniform consistency is achieved.

For Nitomortar PE Concrete, measure out the correct volume of surface dry aggregate (coarse/fine) appropriate to the proposed application. Add this to the previously mixed resin (see above) until a uniform consistency is achieved. Mechanical mixing is recommended for Nitomortar PE Concrete and a forced-action mixer (e.g. Mixal or Cretangle type) should be used.

Do not mix more material than can be used within the pot-life of the product.

Application

Apply the mixed Nitomortar PE to the prepared substrate by steel trowel, pressing firmly into place to ensure positive adhesion and full compaction. In the case of repairs to very dense or non-absorbent substrates, the first layer of Nitomortar PE should be made slightly 'resin-rich' to ensure that the surface to be bonded is properly 'wetted-out'.

Thoroughly compact the mortar around any exposed reinforcement. Refer to the 'Design criteria' chart for maximum thicknesses in a single application. Thicker sections should be built up in layers. If sagging occurs during application, the Nitomortar PE should be completely removed and reapplied at a reduced thickness.

When larger areas are being rendered (generally over 0.25 m² for Nitomortar PE and 0.50 m² for Nitomortar PE Concrete) a chequerboard application technique is recommended.

For certain applications, particularly where access is restricted, the mixed Nitomortar PE can be poured into place. The local Fosroc office should be consulted before proceeding.

When used for bedding purposes or for fixing brick slips, ceramic tiles, slabs, coping stones, etc, provision might be necessary for temporary support.

Note: The minimum applied thickness of Nitomortar PE and Nitomortar PE Concrete is 5 mm.

Build-up

The following guidelines should be used.

	Nitomortar PE	**Nitomortar PE Concrete**
Maximum thickness:	12 mm	40 mm
Minimum thickness:	5 mm	5 mm*
Maximum plan area:	0.25 m²	0.50 m²
Maximum linear run:	1 metre	1 metre

Greater thicknesses should be built up in layers and larger areas should be applied in a 'chequerboard' fashion. Consult the local Fosroc office for further information.

* Note: When using aggregate larger than a sand grading, the minimum thickness will be increased. Consult the local Fosroc office for further information.

Additional build-up can be achieved by application of multiple layers. Exposed steel reinforcing bars should be firmly secured to avoid movement during the application process as this will affect mortar compaction, build and bond.

Where thicker sections are required, the surface of the intermediate applications should be scratch-keyed to provide a suitable surface for subsequent layers. The application of additional layers should follow between 8 and 24 hours after the first application.

Finishing

Nitomortar PE is finished by the use of a steel trowel which may be wiped from time to time with a cloth moistened with Fosroc Solvent 105. The completed surface should not be overworked.

Low temperature working

Nitomortar PE can be applied in cold conditions down to 0°C. The material should not be applied when the substrate and/or air temperature is below freezing or where the substrate is contaminated with frost or ice. In cold conditions, the winter grade may be more appropriate. Consult the local Fosroc office for further information.

High temperature working

At ambient temperatures above 25°C, Nitomortar PE will have shorter pot lives and working lives. The material should not be used at ambient or surface temperatures above 35°C. At elevated temperatures, the product should be stored in the shade or in an air-conditioned environment for 24 hours prior to use and should not be applied in direct sunlight.

Nitomortar PE

Curing

Curing protection is not necessary for Nitomortar PE products.

Cleaning

Nitomortar PE should be removed from tools, equipment and mixers with Fosroc Solvent 105 immediately after use.

Estimating

Supply

Nitomortar PE:	14 kg packs
Nitomortar PE winter grade:	14 kg packs
Nitomortar PE Concrete:	11 kg packs
Nitoprime Zincrich Plus	1.9 litre and 800ml cans

Coverage and yield

Nitomortar PE:	7.5 litres / 14 kg pack
Nitomortar PE winter grade:	7.5 litres / 14 kg pack
Nitomortar PE Concrete:	15 to 27.5 litres / 11 kg pack (dependent on aggregate addition)
Nitoprime Zincrich Plus	8.0 m^2 per litre

Note: The coverage figures given are theoretical — due to wastage factors and the variety and nature of possible substrates, practical coverage figures will be reduced.

Limitations

The products should not be applied to damp or wet surfaces where there is total reliance on bond nor should they be exposed to moving water during application. Exposure to heavy rainfall prior to the final set may result in surface scour. If any doubts arise concerning temperature or substrate conditions, consult the local Fosroc office.

Storage

Store in dry conditions in the original, unopened bags or packs. All products have a shelf life of 12 months at 20°C if kept in a dry store in the original, unopened packaging.

If stored at high temperatures and/or high humidity conditions the shelf life may be significantly reduced.

Precautions

Health and safety

For further information refer to appropriate Product Safety Data Sheet.

Fire

Nitomortar PE products are flammable. Keep away from sources of ignition. No Smoking. In the event of fire, extinguish with CO_2 or foam. Do not use a water jet.

Flash point

Nitomortar PE resin:	29°C
Nitoprime Zincrich Plus	41°C

For further information, refer to the Product Safety Data Sheet.

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